FIG. 1

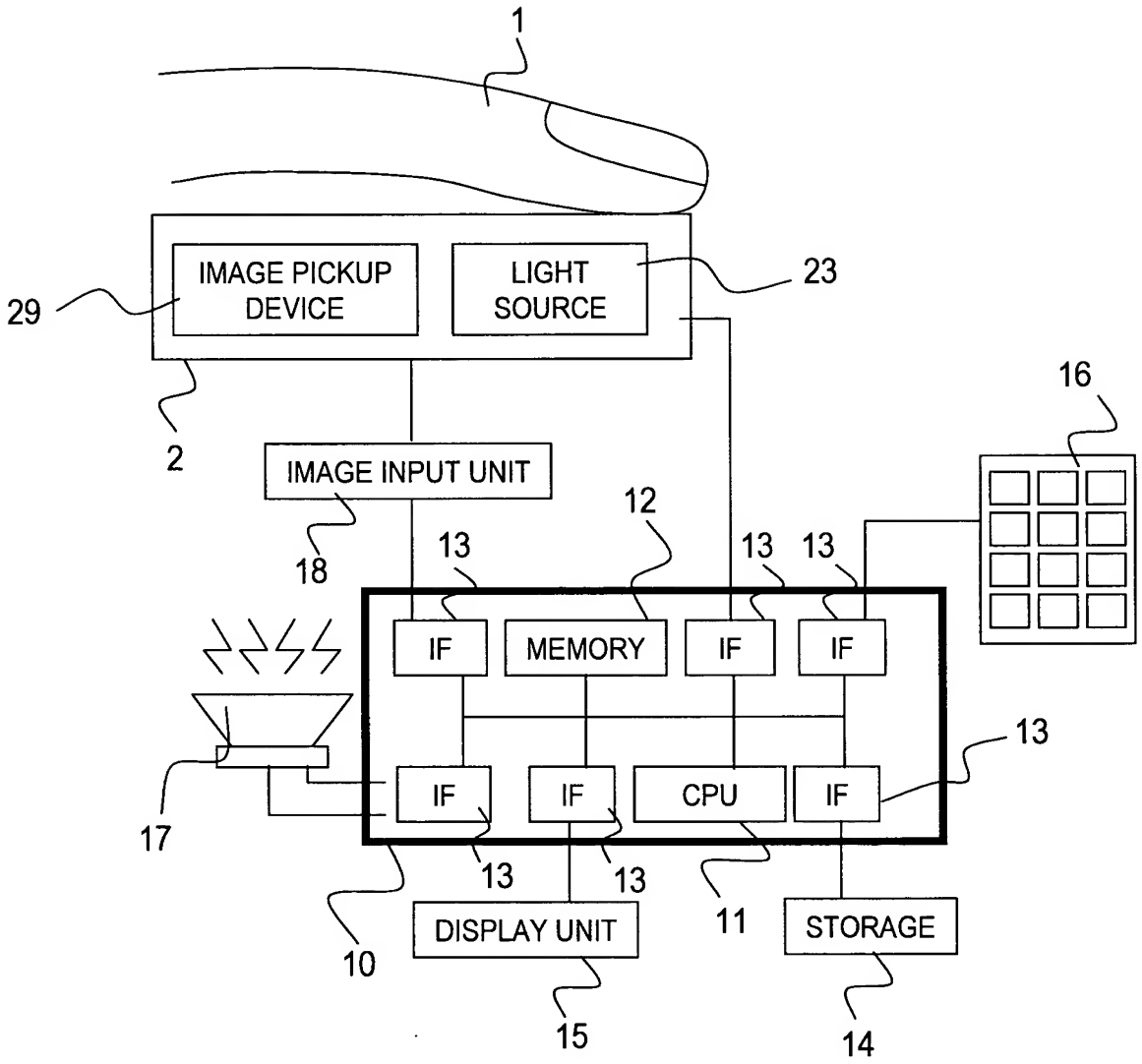
1
IMAGE PICKUP DEVICE
LIGHT SOURCE
29
23
2
IMAGE INPUT UNIT
18
16
12
13
13
13
IF
MEMORY
IF
IF
13
IF
IF
CPU
IF
17
13
13
10
11
DISPLAY UNIT
STORAGE
15
14

FIG. 2

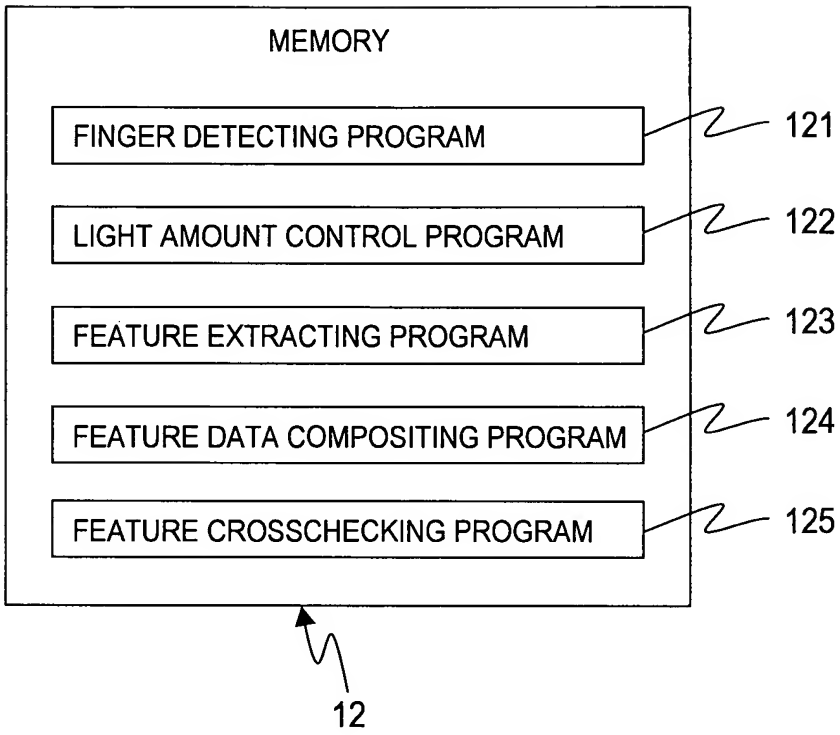
MEMORY
FINGER DETECTING PROGRAM
121
LIGHT AMOUNT CONTROL PROGRAM
122
FEATURE EXTRACTING PROGRAM
123
FEATURE DATA COMPOSITING PROGRAM
124
FEATURE CROSSCHECKING PROGRAM
125
12

FIG. 3A

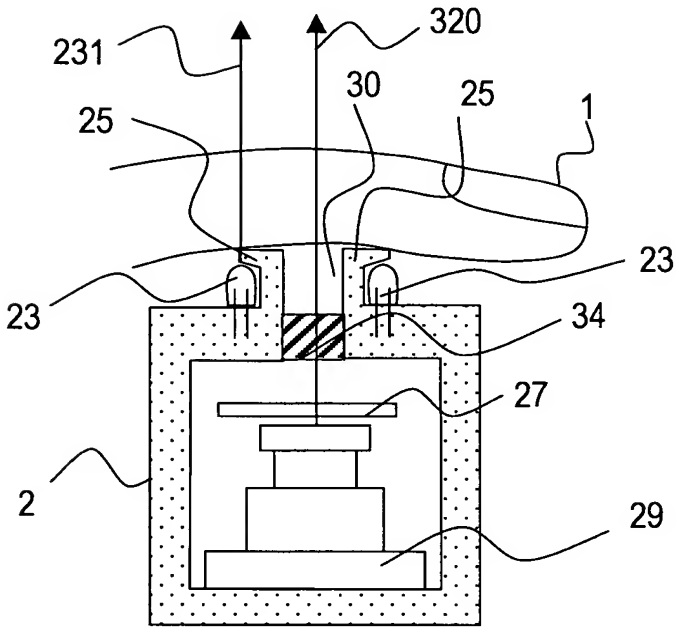

FIG. 3B

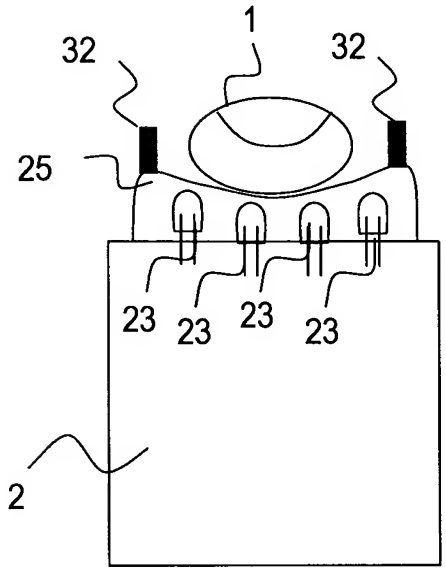

FIG. 3C

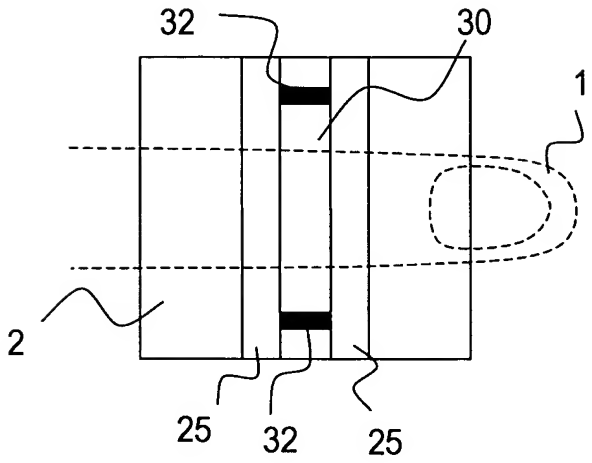

FIG. 4A

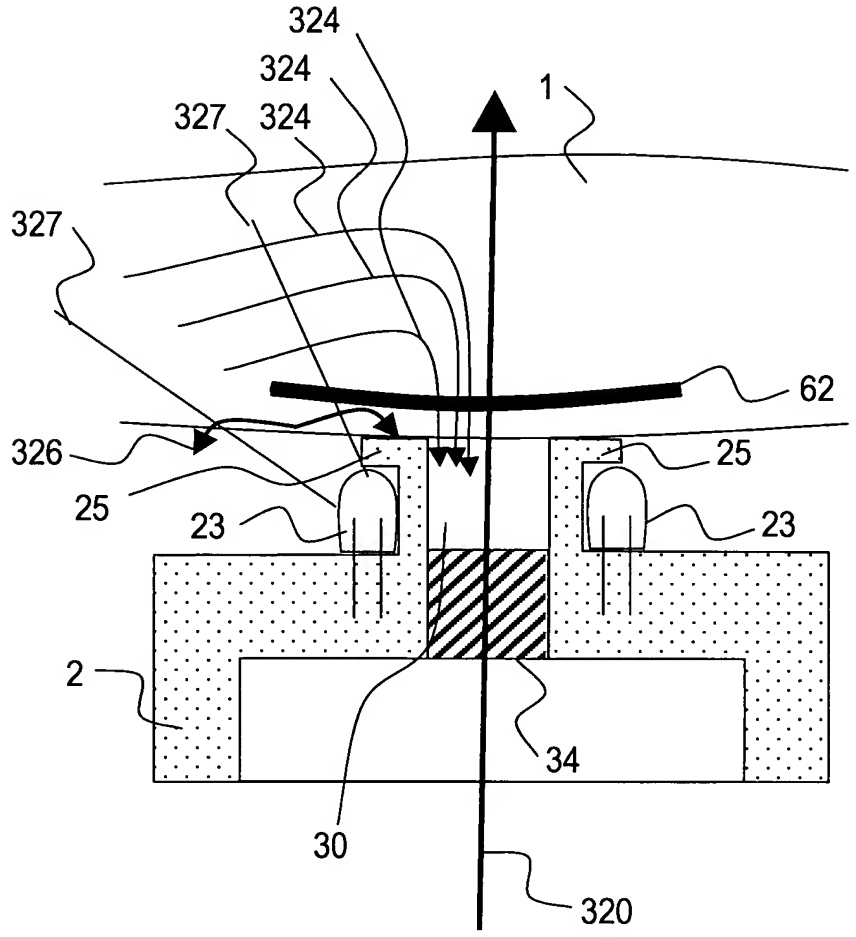

FIG. 4B

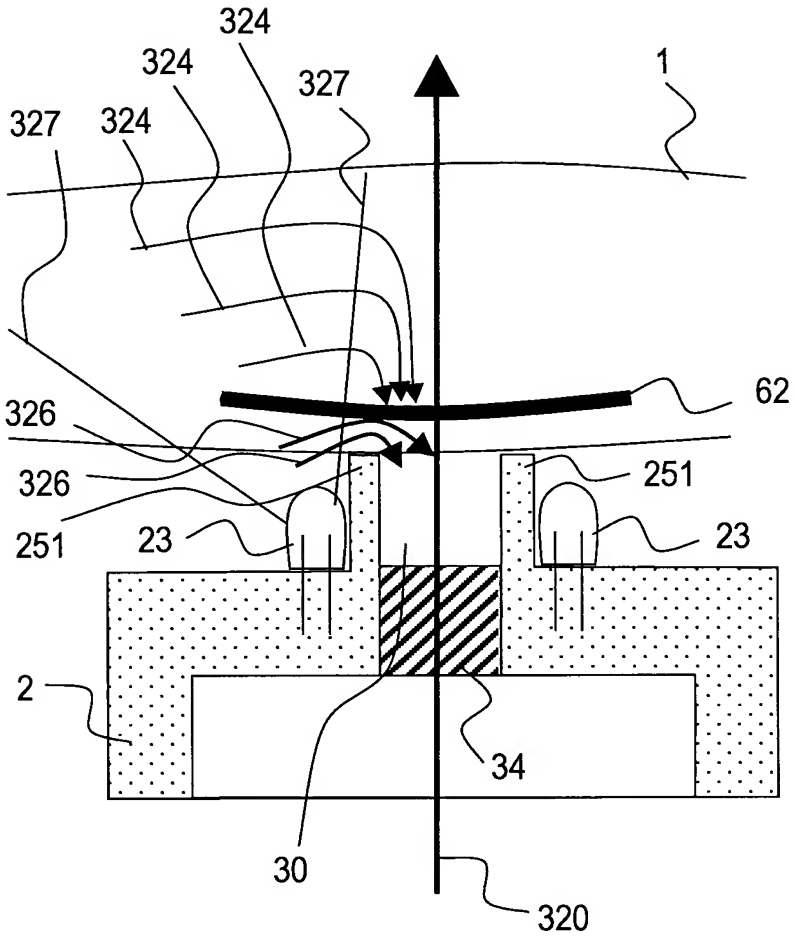

FIG. 5A

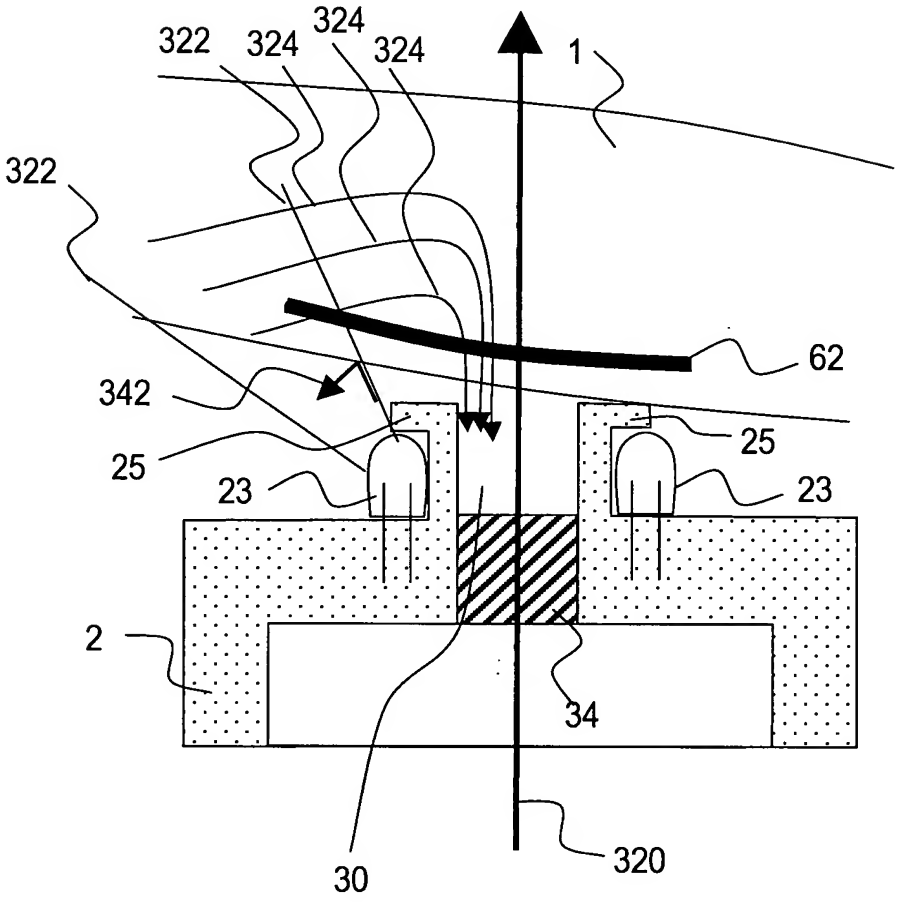

FIG. 5B

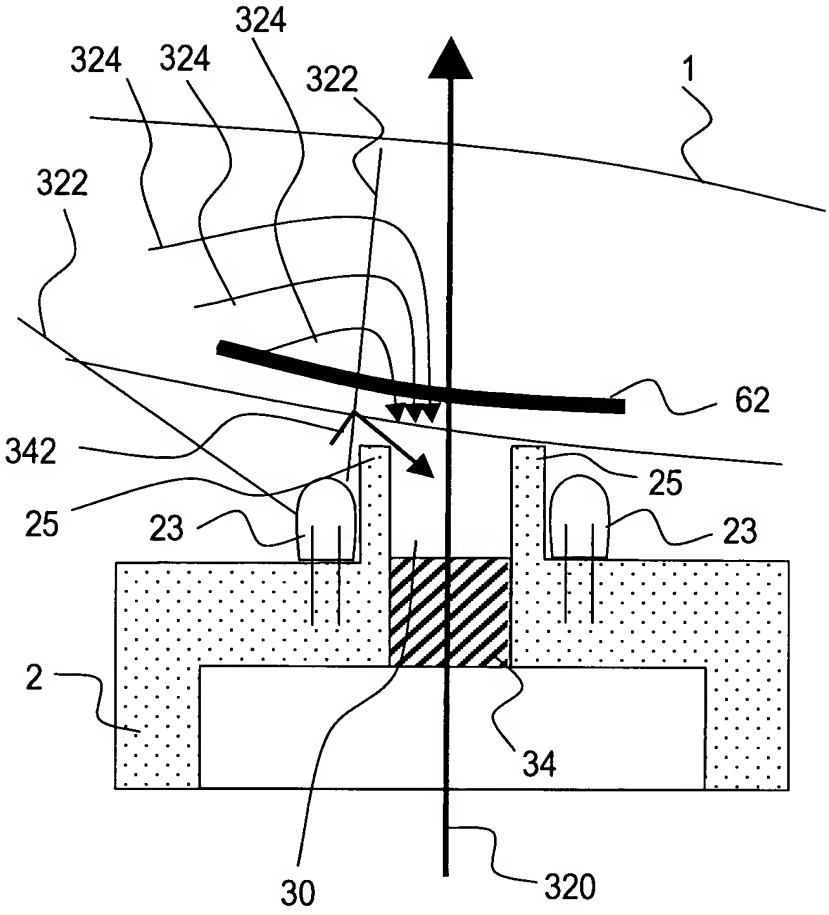

FIG. 6

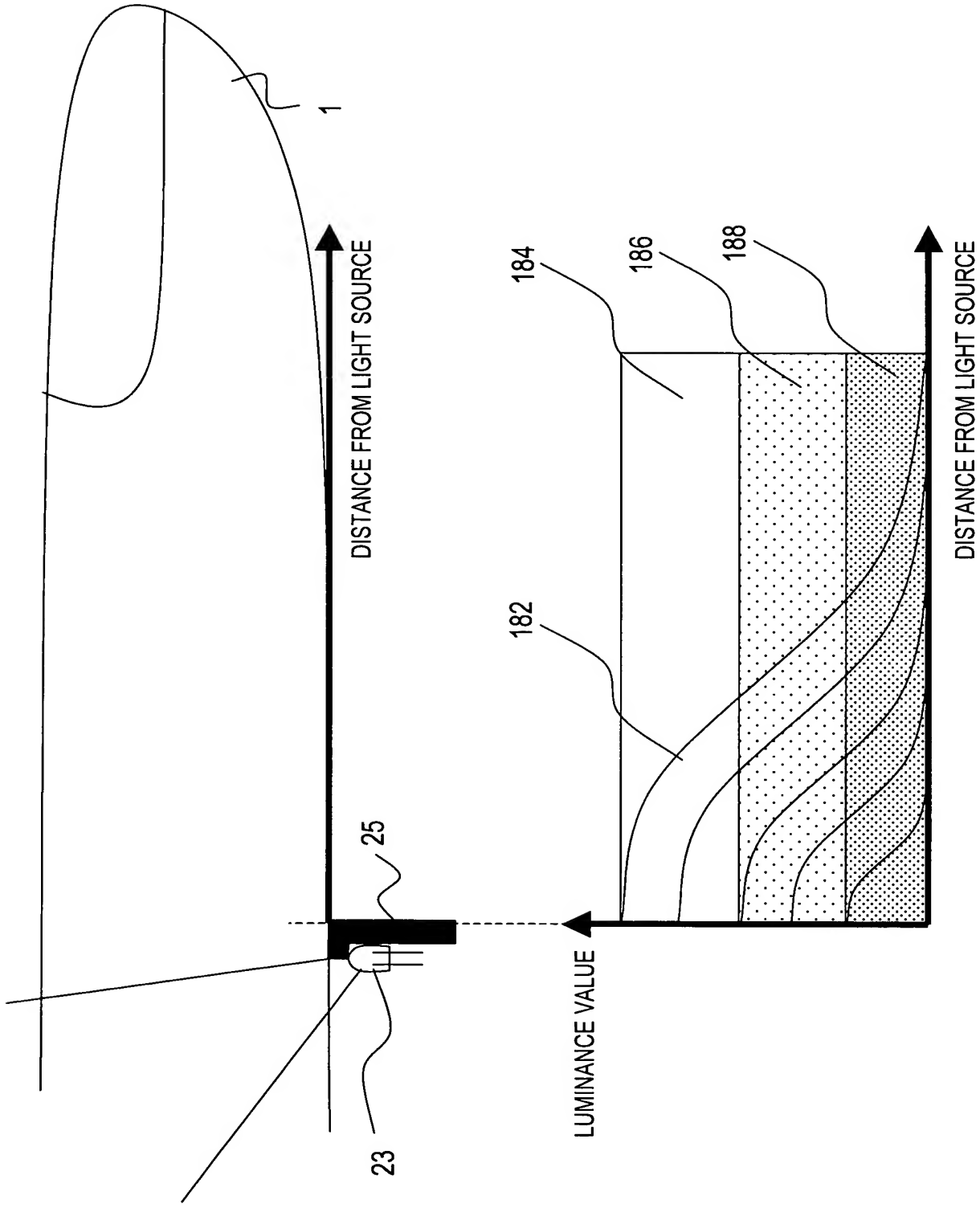
1
DISTANCE FROM LIGHT SOURCE
25
23
LUMINANCE VALUE
182
184
186
188
DISTANCE FROM LIGHT SOURCE

FIG. 7

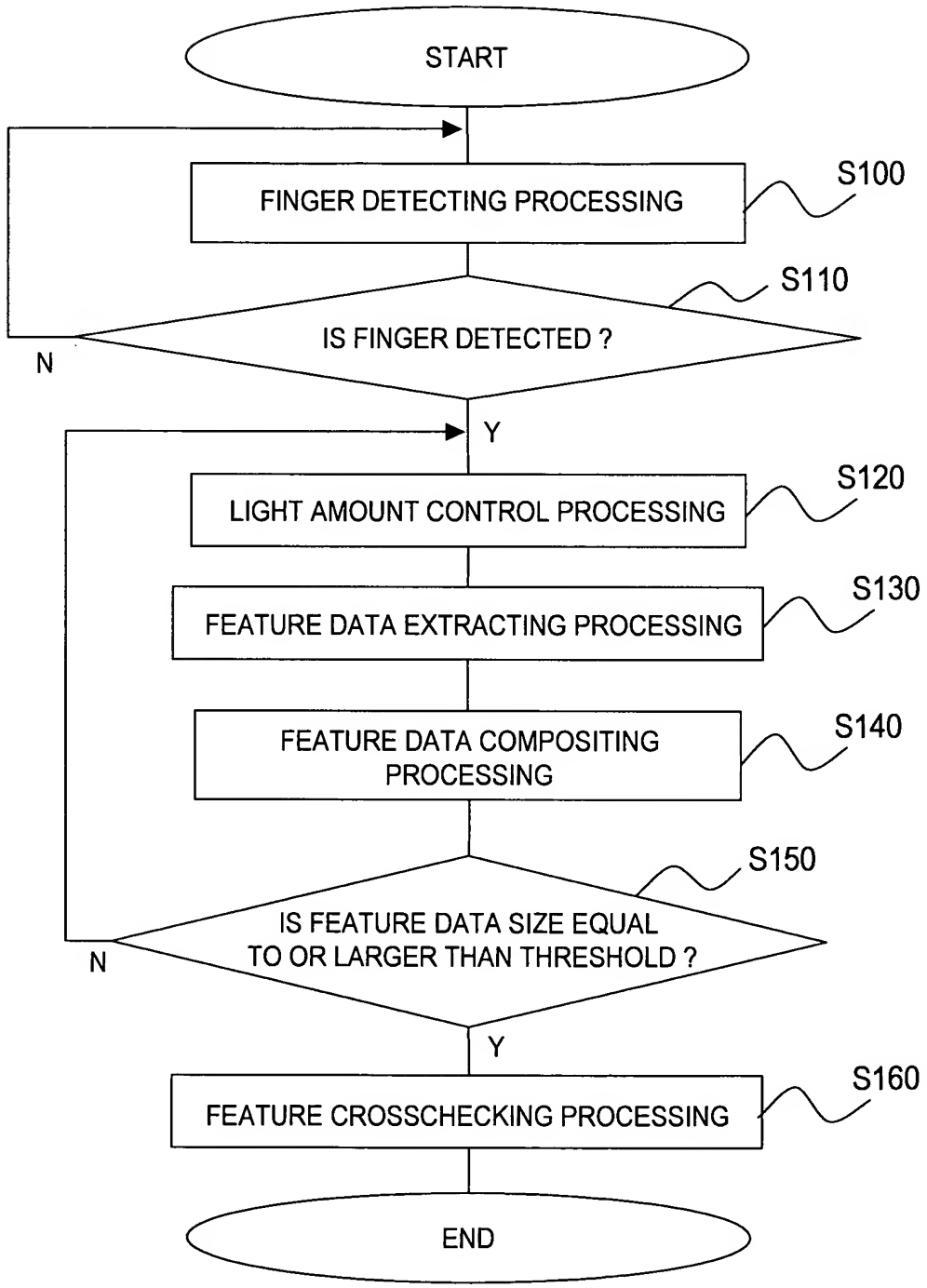
START
FINGER DETECTING PROCESSING
S100
S110
IS FINGER DETECTED ?
N
Y
LIGHT AMOUNT CONTROL PROCESSING
S120
FEATURE DATA EXTRACTING PROCESSING
S130
FEATURE DATA COMPOSITING PROCESSING
S140
S150
IS FEATURE DATA SIZE EQUAL TO OR LARGER THAN THRESHOLD ?
N
Y
FEATURE CROSSCHECKING PROCESSING
S160
END

FIG. 8A

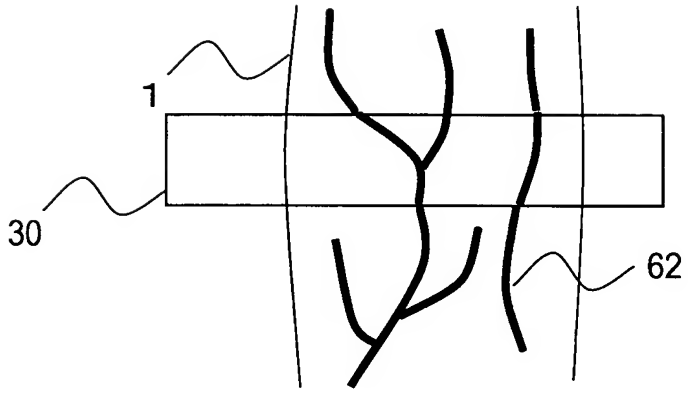

FIG. 8B

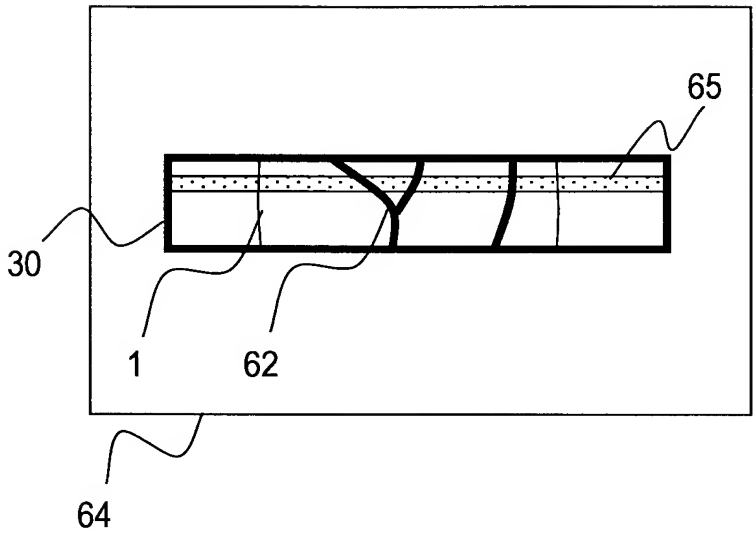

FIG. 8C

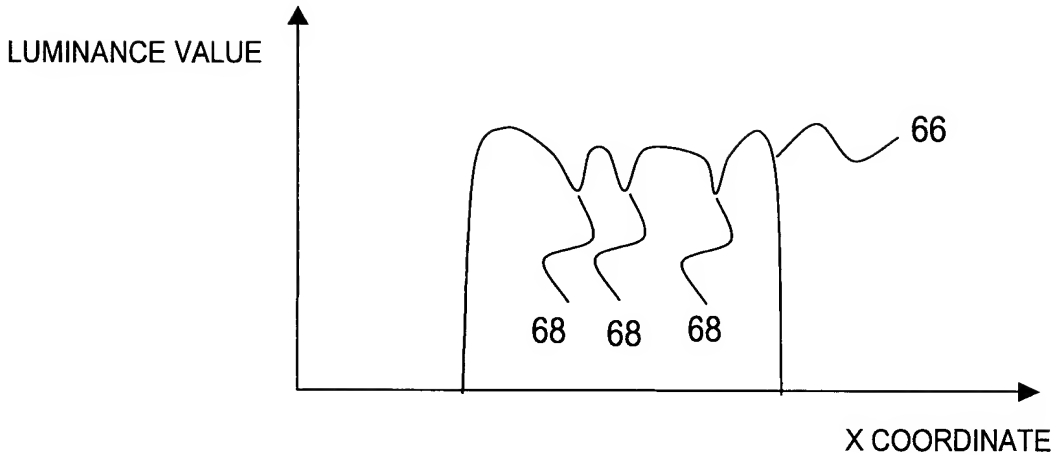

FIG. 9

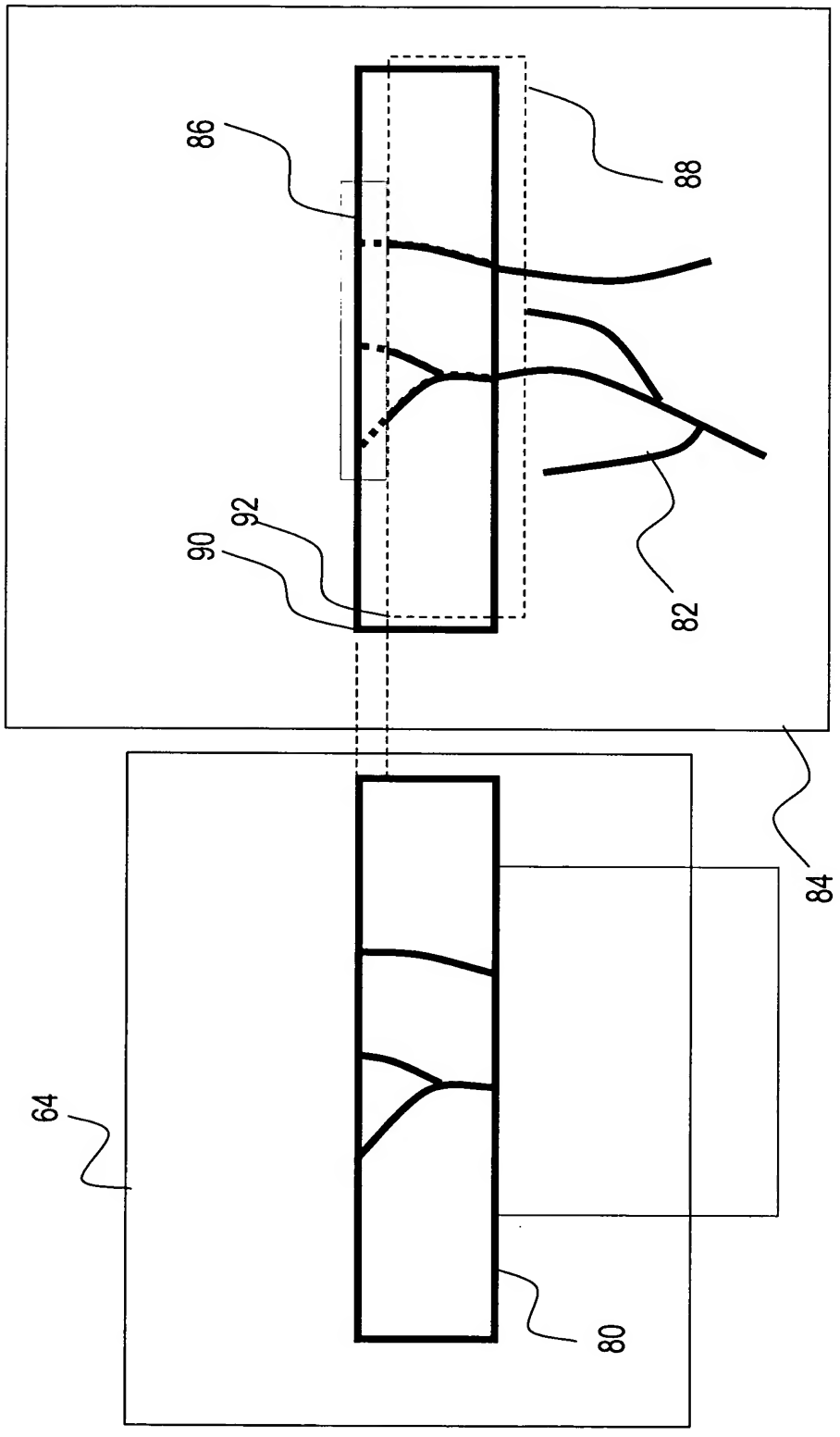

FIG. 10

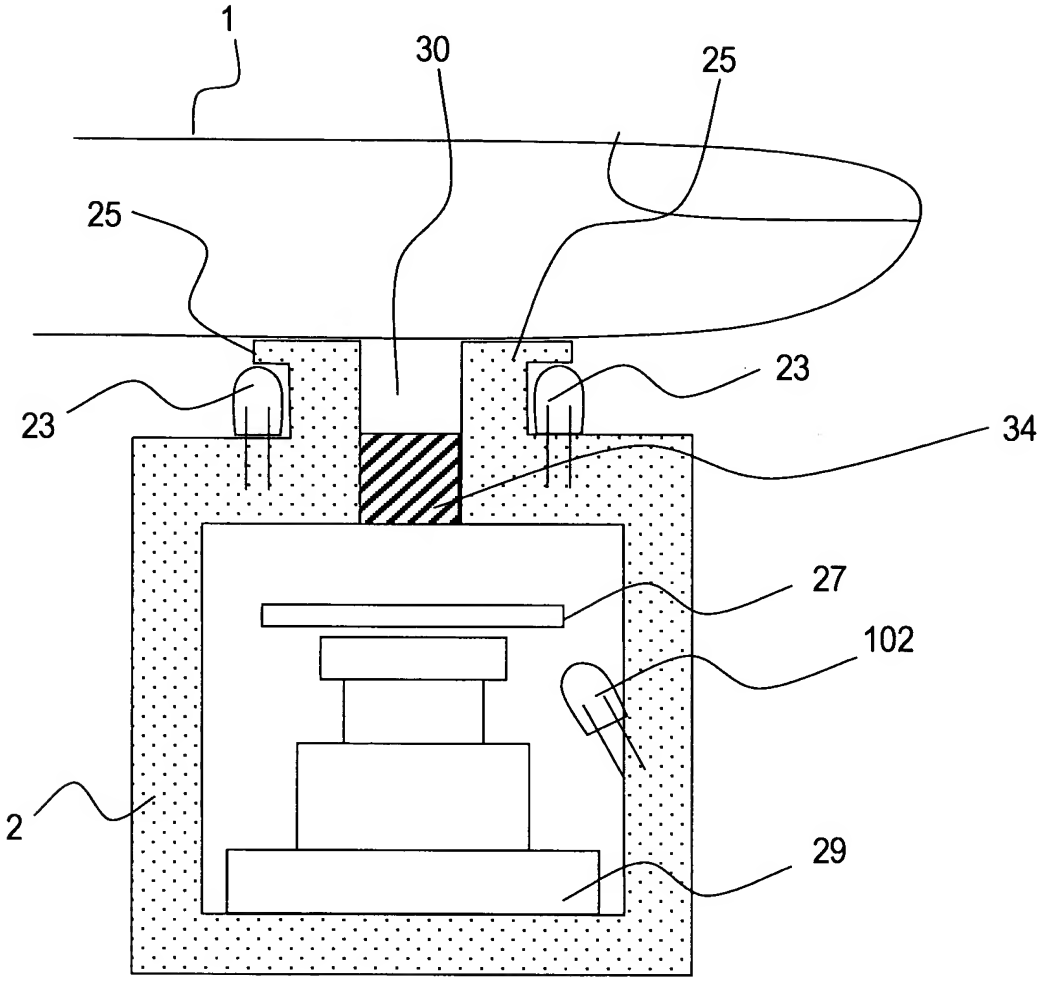

FIG. 11A

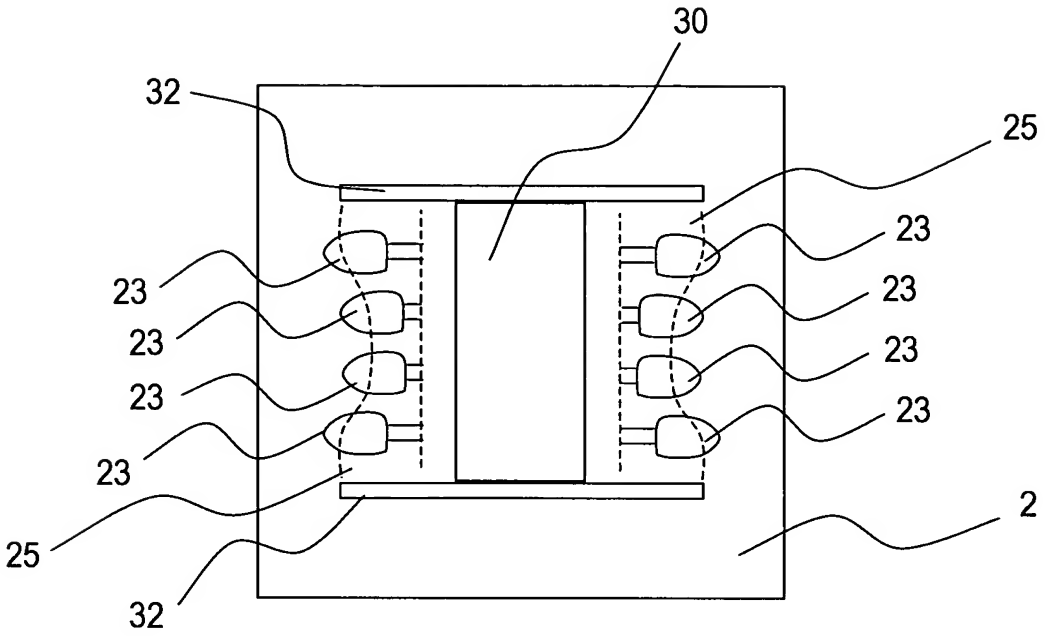

FIG. 11B

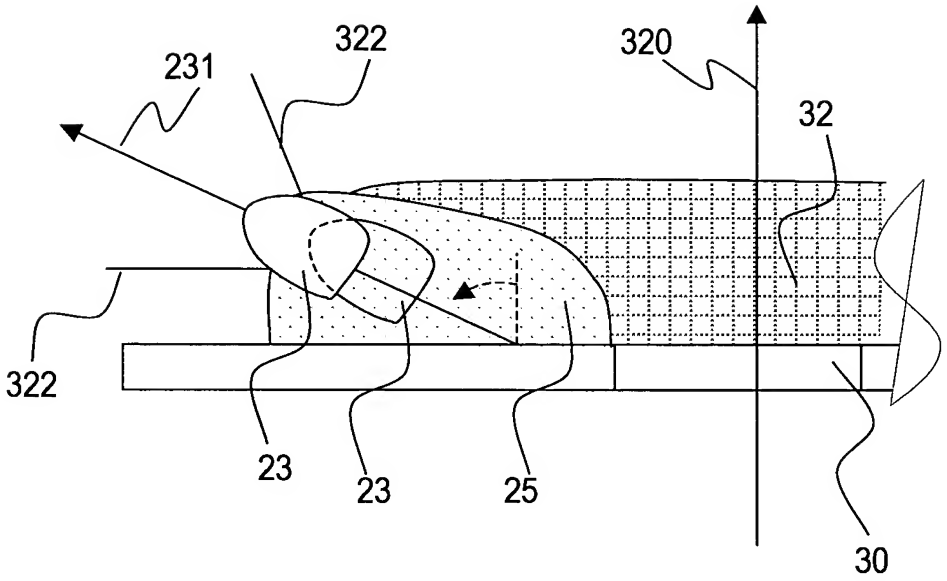

FIG. 11C

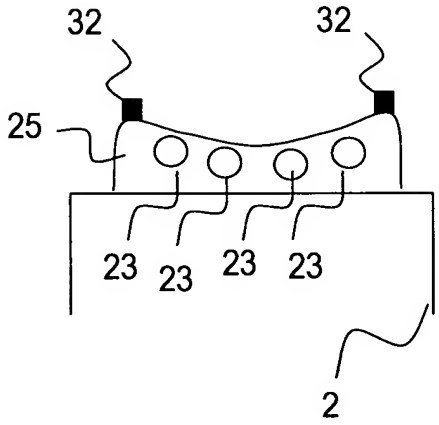

FIG. 12

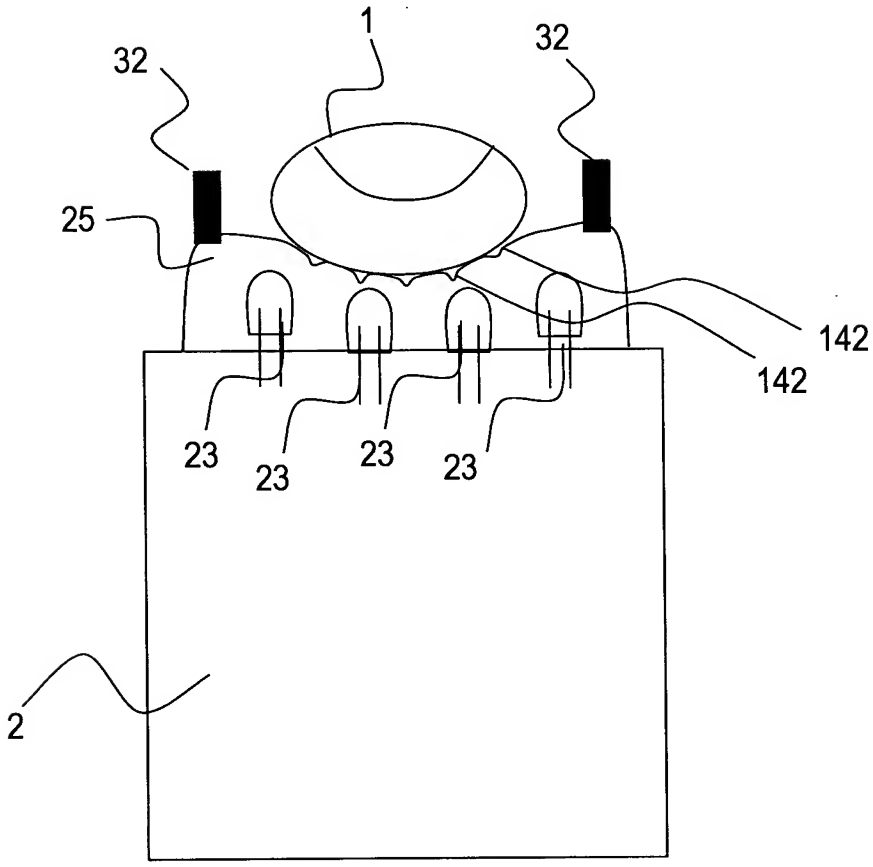

FIG. 13

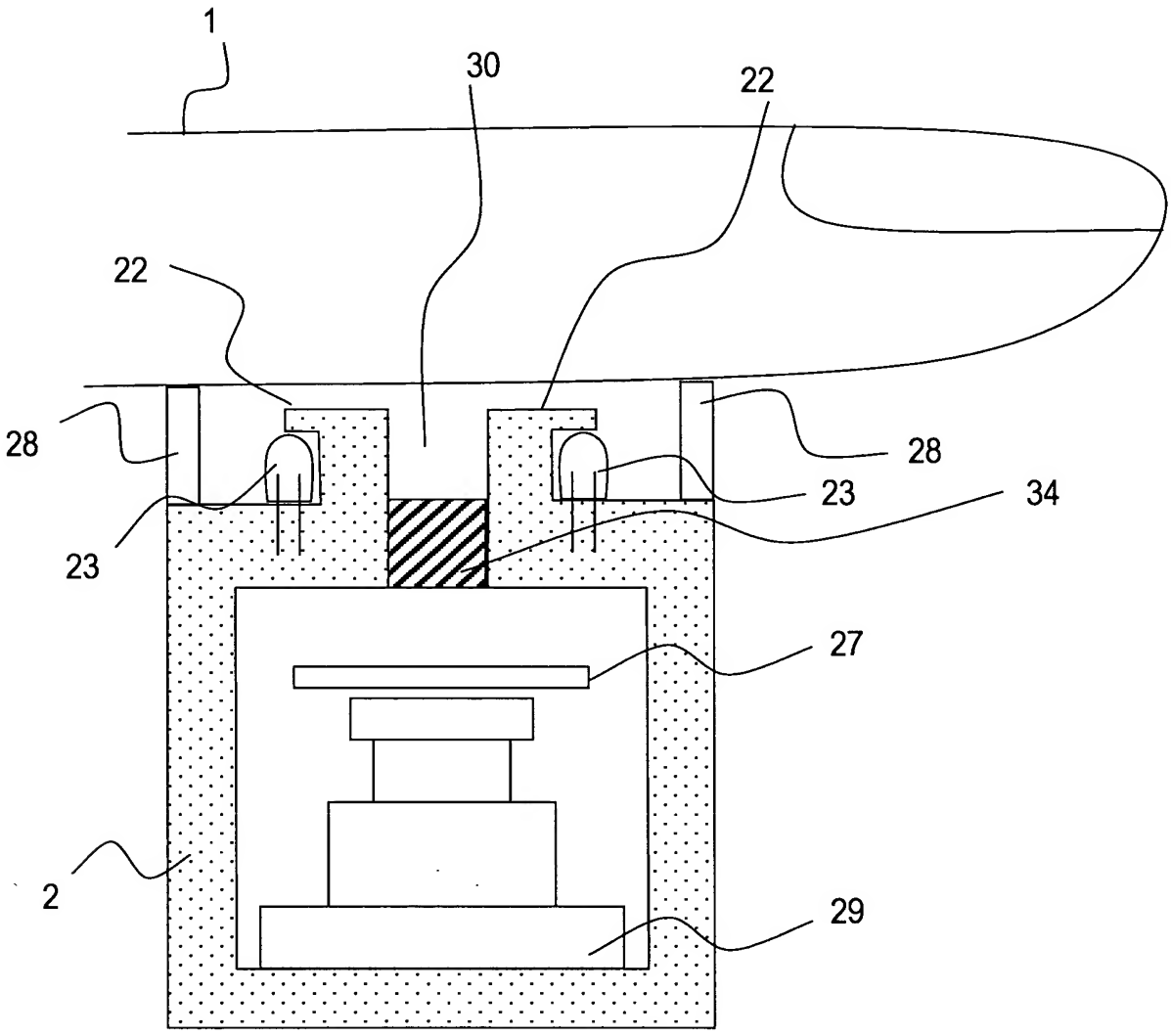

FIG. 14

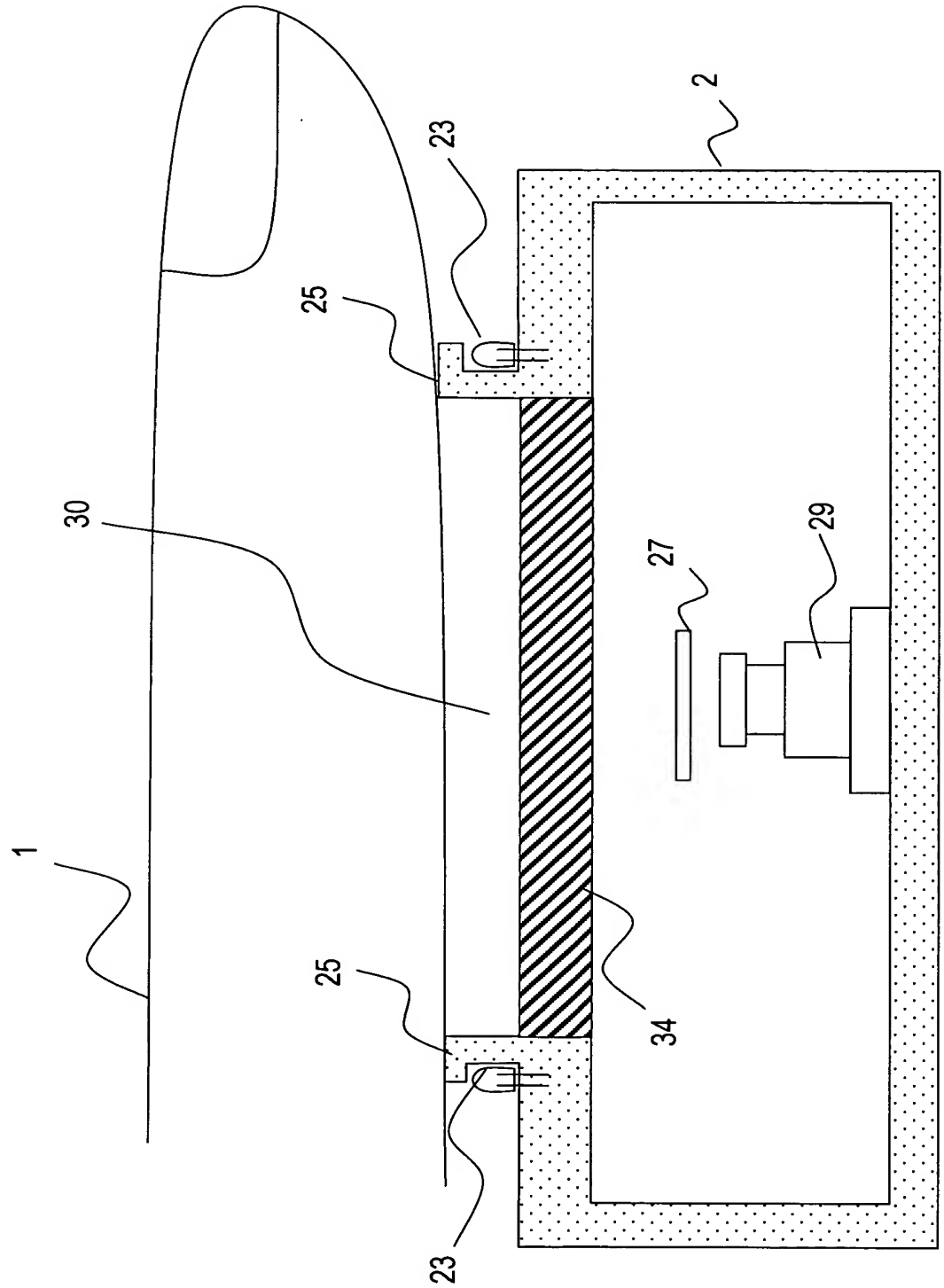

FIG. 15

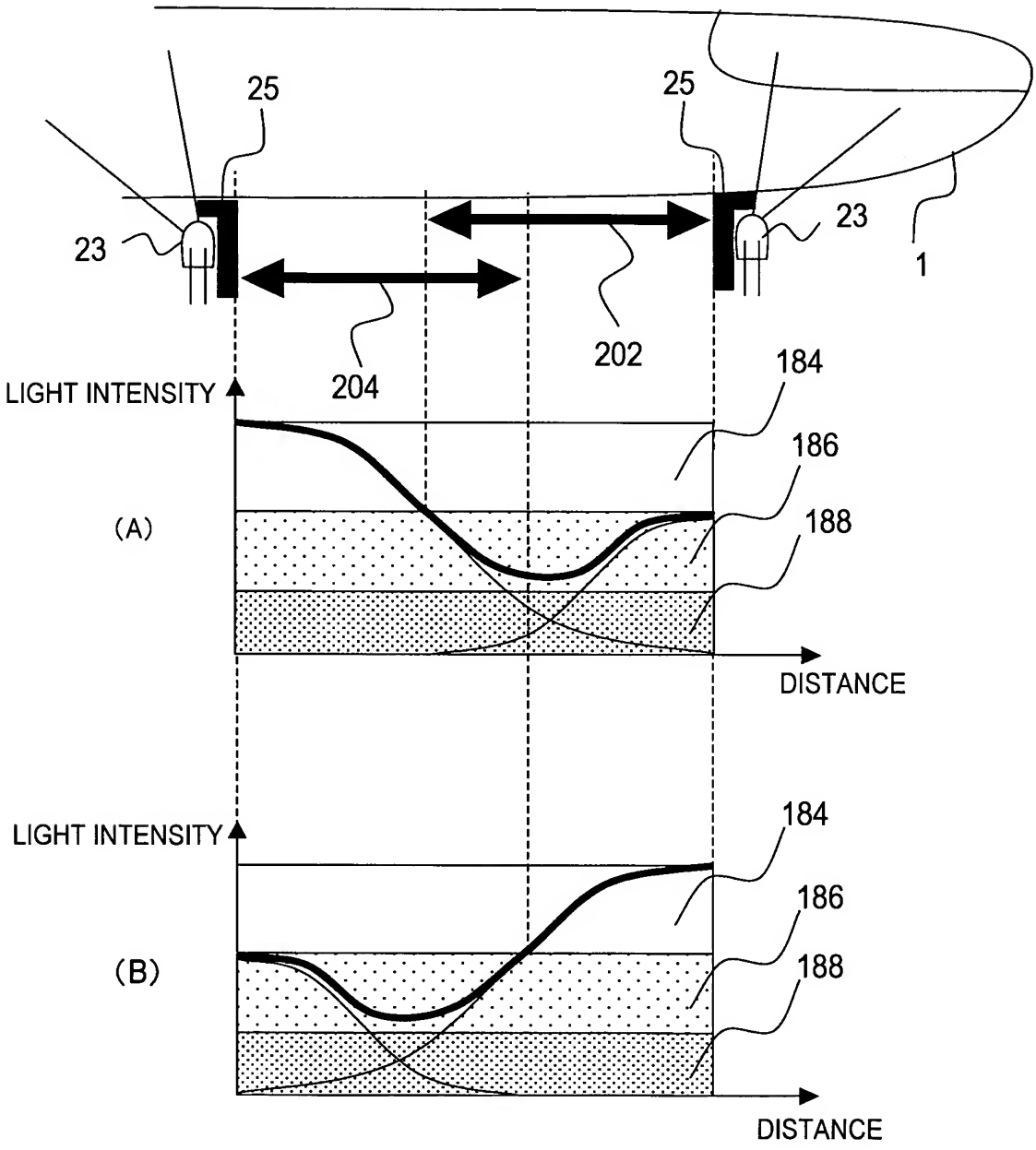
25
25
23
23
1
204
202
LIGHT INTENSITY
184
186
188
(A)
DISTANCE
LIGHT INTENSITY
184
186
188
(B)
DISTANCE

FIG. 16A

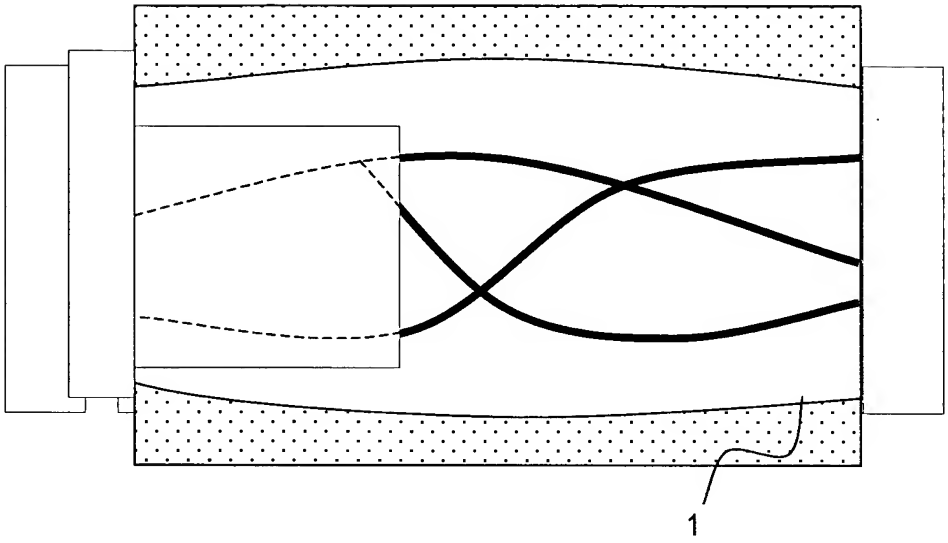

FIG. 16B

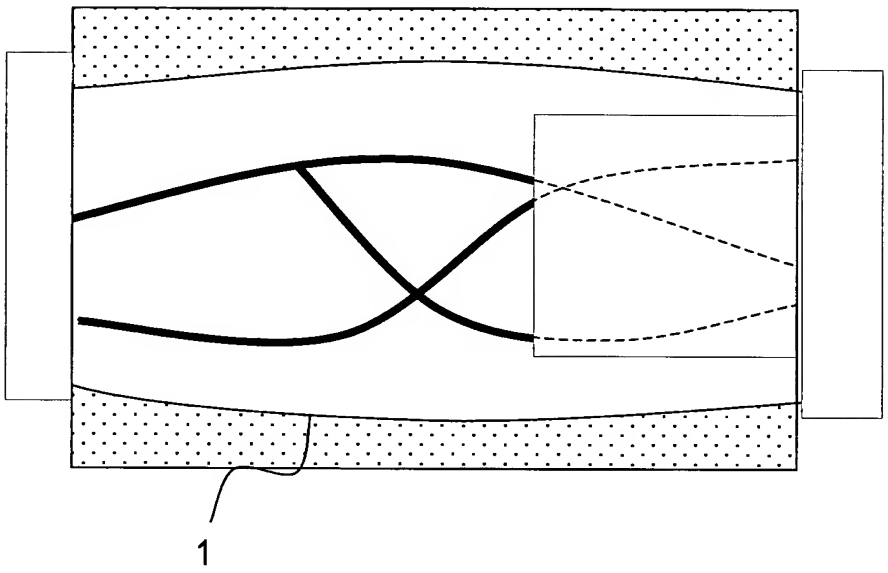

FIG. 16C

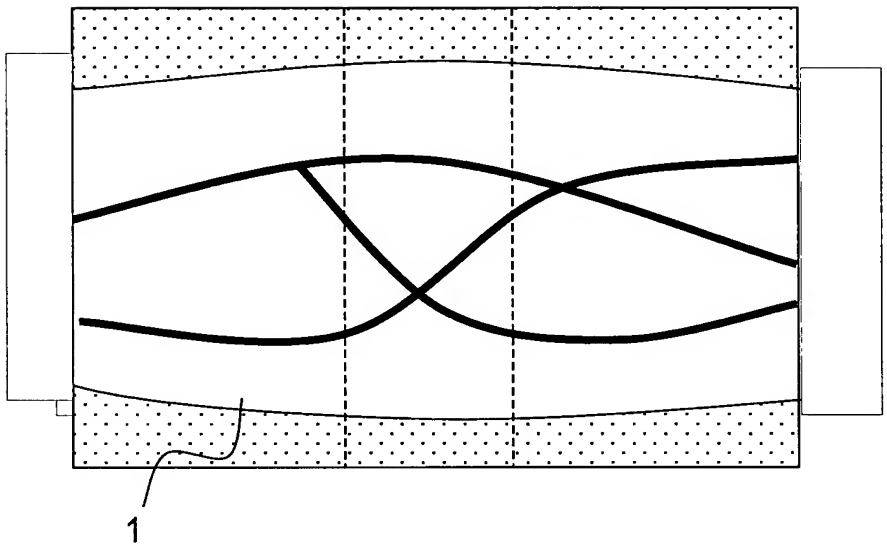

FIG. 17A

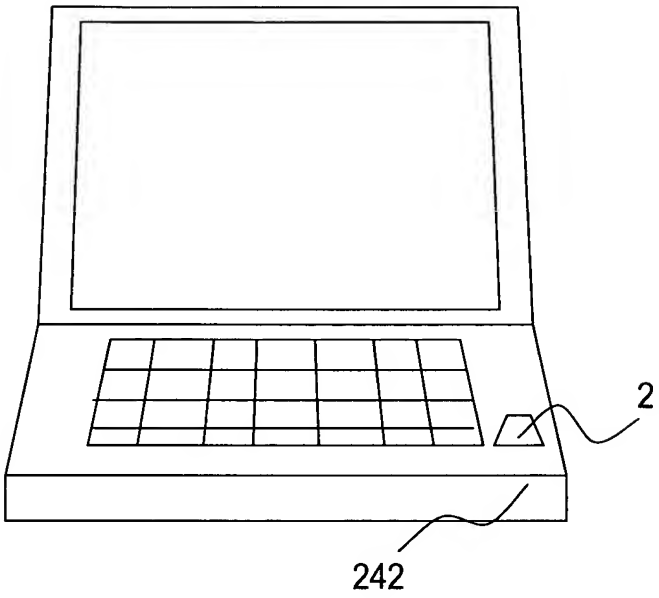

FIG. 17B

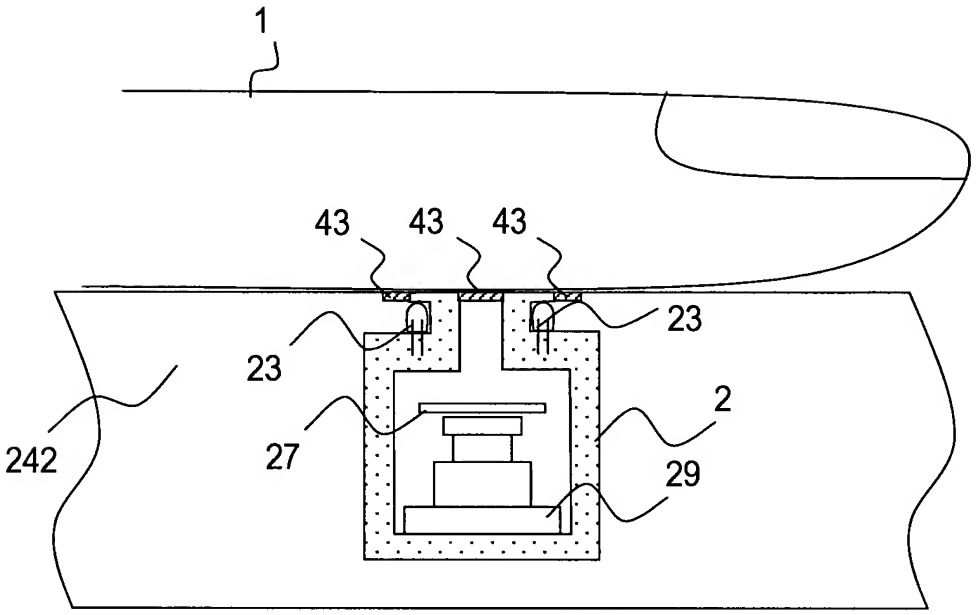

FIG. 18A

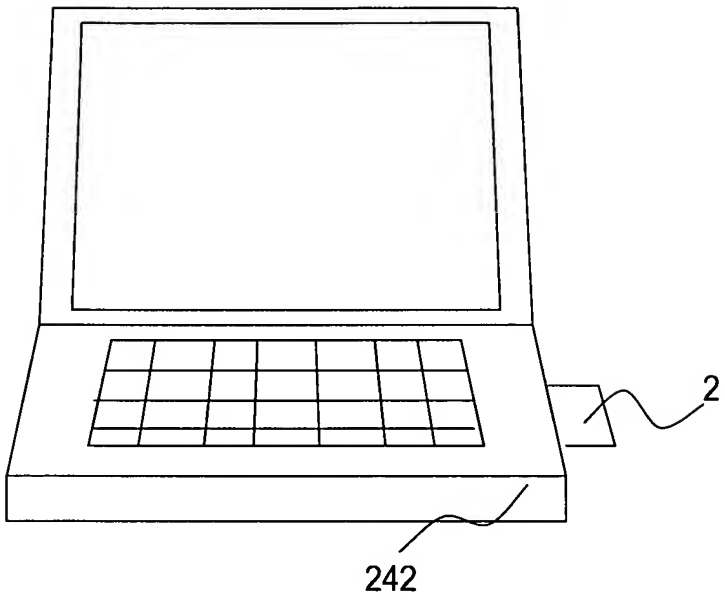

FIG. 18B

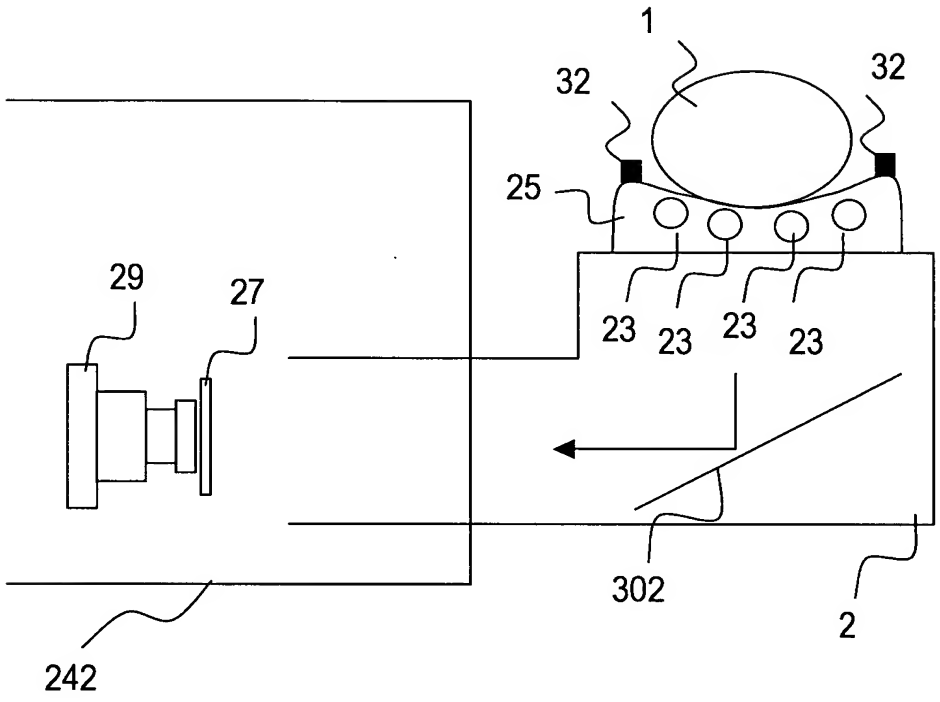

FIG. 19A

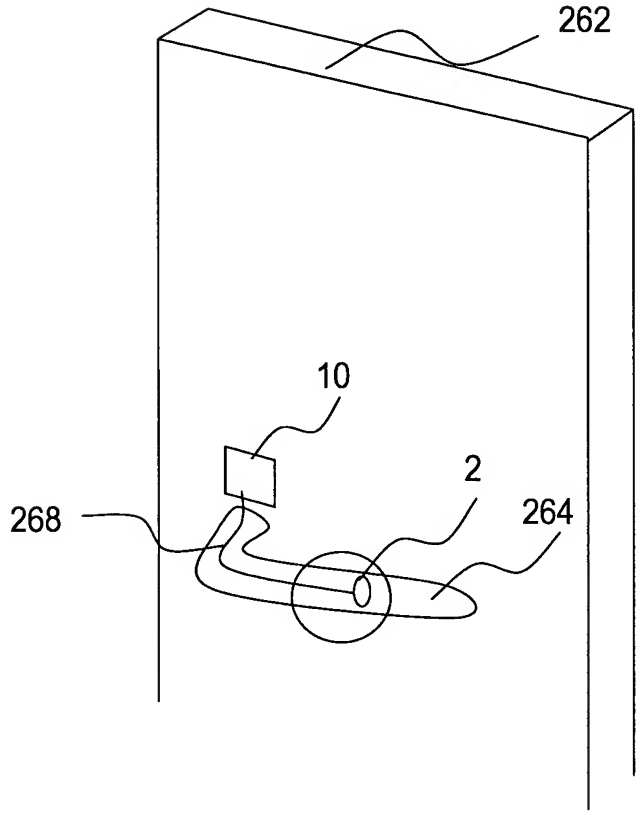

FIG. 19B

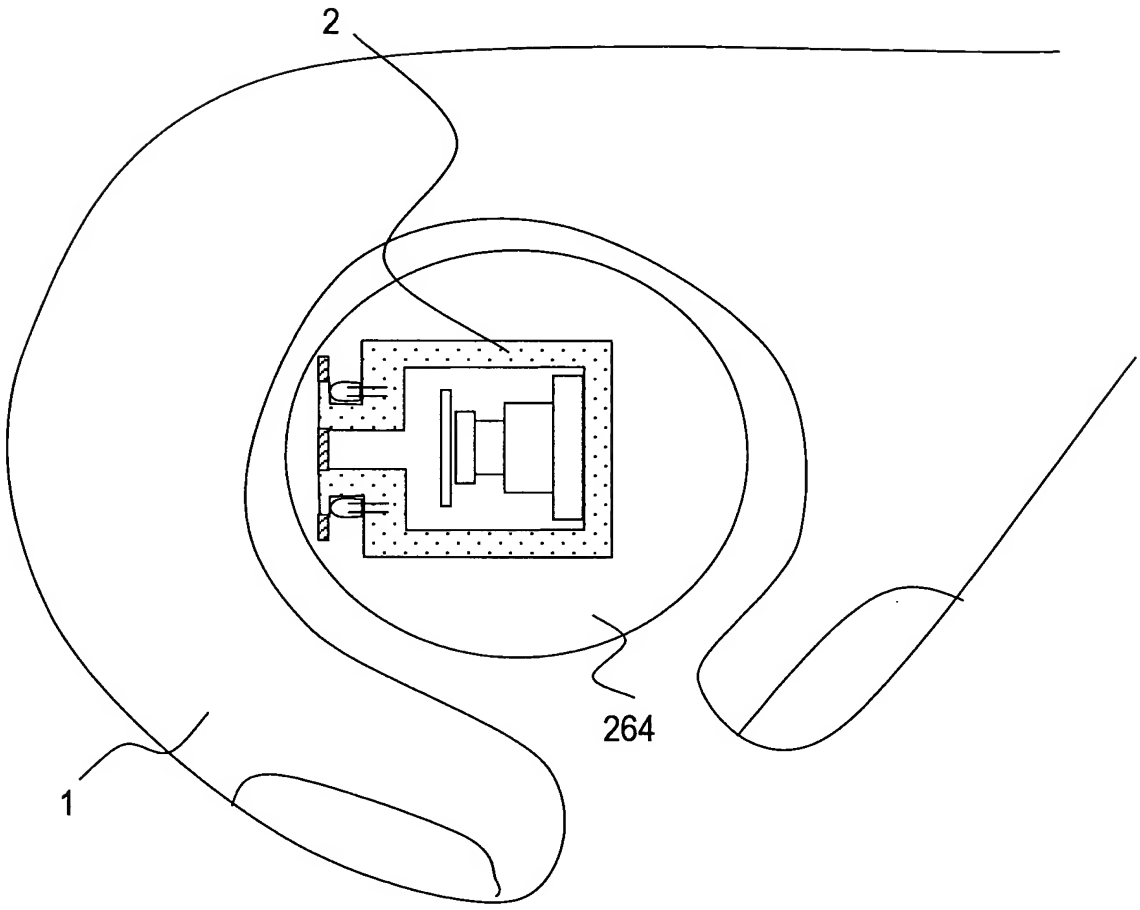

FIG. 20A

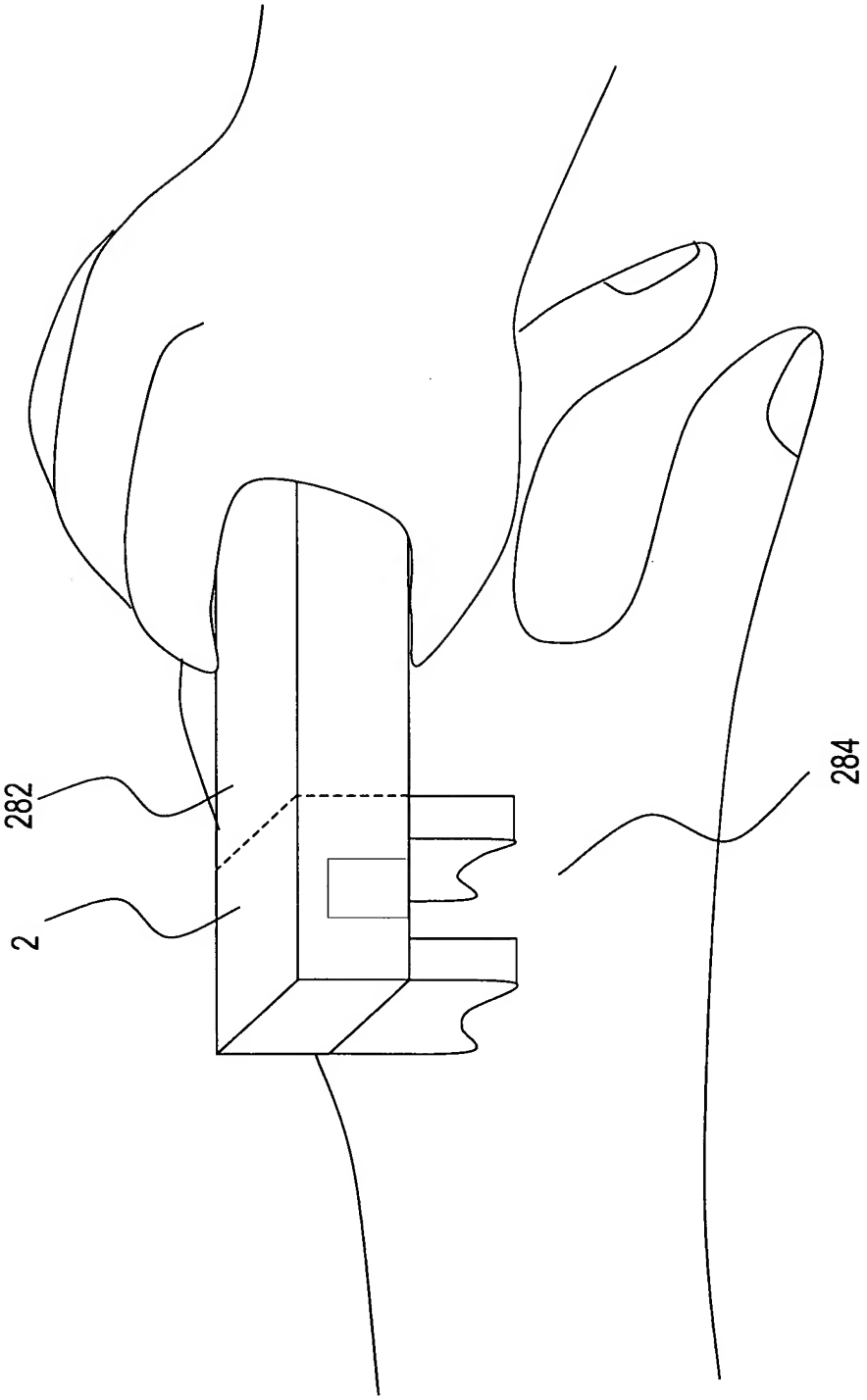
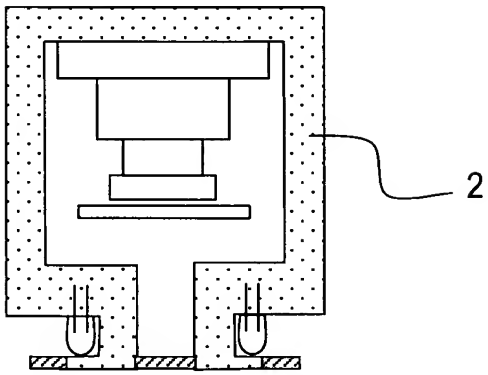
FIG. 20B